and joint kinematics of the hip, the knee and the ankle were measured using a motion capture system (100 Hz, Motion Analysis®). Kinetic parameters were measured using two force platforms (1000 Hz, AMTI®).

Results.– Spatiotemporal gait parameters were improved with DAFO on the hemiparetic side: velocity (+4%), stride and step length (+22% and +19%), and cadence (+17%). With the DAFO, heel strike was performed with a slight ankle dorsiflexion (−9 ± 9° to 0.35 ± 5°). In the stance phase of gait, DAFO increased ankle dorsiflexion (11 ± 4° to 17 ± 4°) and decreased ankle plantarflexion (−13 ± 7° to −5 ± 6°), and decreased hip flexion (3 ± 11° to −1 ± 10°) in the affected limb. In the swing phase, DAFO increased the ankle dorsiflexion (−2 ± 6° to 6 ± 4°) and the knee flexion (36 ± 13° to 40 ± 14°), and decreased the ankle plantarflexion (−16 ± 10° to −3 ± 9°) and the hip flexion (11 ± 12° to 6 ± 13°) in the affected limb. The internal ankle moment tended to normalize when wearing a DAFO.

Discussion.– This device, assisting ankle dorsiflexion during the swing phase, also improves gait parameters in the stance phase, by decreasing equinus during heel strike. In conclusion, this orthosis would be appropriate for hemiplegic patients with a deficit of ankle dorsiflexion during the swing phase associated with moderate equinus.


P034–EN

Patient satisfaction survey on knee-ankle-foot orthoses carried out during an apparatus workshop at the El-Ayachi hospital

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Keywords: Knee-ankle-foot orthosis; Poliomyelitis

Objective.– This study provides an assessment of the satisfaction of patients with knee-ankle-foot orthosis (KAFO).

Methods.– We collected all patients for whom a knee-ankle-foot orthosis was crafted in the apparatus workshop of our hospital during 2010. The satisfaction evaluation was conducted using version 2.0 of the validated Quebec questionnaire Assessment of Satisfaction with technical assistance (ESAT 2.0 or QUEST 2.0 in English). For each of the 12 items of ESAT, the patient indicates the degree of satisfaction on a scale of 1 to 5 (1 = not at all satisfied, 2 = not very satisfied, 3 = satisfied, 4 = very satisfied, 5 = strongly satisfied).

Concerning “services”: 6 patients were satisfied for all four items, 13 patients did not respond.

Conclusion.– The results of this survey will be useful for improvement of the KAFO in terms of “technology” and “services”.


P035–EN

Quantification of valgus foot re-equilibration by biomechanical foot orthotics

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Keywords: Foot orthotics; Biomechanics; Motion analysis; Valgus feet; Inversion

Aim.– Foot orthotics are used for the correction of musculoskeletal disorders. The aim of this study was to quantify the effects induced by biomechanical foot orthoses (OPBF) on valgus feet.

Materials and methods.– Eight patients with various pathologies of the lower limb participated in the study. These patients had valgus foot dysfunction directly related to their pathology. In addition, the proposed orthotic therapeutic was similar. Indeed, custom-made biomechanical foot orthotics (OPBF), consisting of a main effect of inversion were made. Their goal was to correct, dynamically, functional architecture of the foot during the stance phase. Two gait analyses without and then with orthotics were made for each patient.

Results.– Wearing OPBF showed 4° supination of the foot from the ground associated with a similar limitation of pronation at the ankle. Further, the center of pressure moved to the medial aspect of the foot about 5% resulting in a 0.05 Nm/kg reduction of supinator muscle torque at the ankle. All these changes were significant (P < 0.001).

Discussion.– Custom-made biomechanical foot orthotics allow correction of the foot dysfunction causing the overlying pathology. Support on the medial aspect of the foot limits the valgus foot and increases the internal contact surface of the foot with the ground. Thus the OPBF assists the posterior tibial muscle in the control of pronation. This is a distal-proximal action of the orthosis allowing a re-orientation of bone segments and, necessarily a muscular rehabilitation.

Further reading


